

HYDRAULICS RESEARCH DIVISION

Technical Note

DATE: January, 1976

REPORT NO: 76-1

TITLE: Changes in size-analysis procedures, CCIW Sedimentology Laboratory

AUTHORS: N.A. Rukavina and G.G. LaHaie

REASON FOR REPORT:

This report is a interim up-date of size-analysis procedure pending publication of Physical Sedimentology Manual.

Changes in size-analysis procedure, CCIW Sedimentology Laboratory

This note describes changes in the basic F.A.S.T. procedure for sediment grain-size analysis (Rukavina and Duncan, 1970) and introduces F.A.S.T.'R. (F.A.S.T. Revised), a variant of F.A.S.T. in which Sedigraph analysis (Duncan and Rukavina, 1972) is substituted for Short Pipette analysis in order to improve resolution of the silt fraction and to reduce analysis time.

Figure 1 below replaces Figure 3 and Appendix A of the original paper. Numbers on the figure refer to the explanatory notes below.

1. Mix sediment with 50 ml of "CALGON" solution (50 g/l). Transfer to soil dispersion cup (milkshake type), dilute with about 300 ml of distilled water, and mix for 15 minutes with a standard soils mixer. Transfer to a graduated 500 ml cylinder and top up to the 500 ml level with distilled water. Mix thoroughly for one minute by repeatedly inverting stoppered cylinder. Record temperature of suspension.
2. Mix as before and start interval timer as cylinder is set down. Withdraw pipette aliquot of 25 ml from a depth of 20 cm below the suspension surface at the time corresponding to the suspension temperature in Table 2 of the F.A.S.T. paper.
- 3a. F.A.S.T.
Transfer aliquot to disposable aluminum evaporating dish and oven-dry at 90° for at least 12 hours. Withdraw second pipette aliquot from a depth of 5 cm at time indicated in Table 2. Dry as above.
- 3b. F.A.S.T. 'R.
Transfer aliquot to plastic vial or beaker and proceed with Sedigraph analysis (Duncan and Rukavina, 1972; Sedigraph Manual).
4. Record temperature of water in settling tube and select appropriate reading times from Table 3 of F.A.S.T. paper. Expand the balloon of the release device and introduce wet sample into the space above. Start the programmed tape recorder and release the sample and record the column heights at the indicated times.
5. Record data on computer coding sheet (attached) and submit for key-punching.
6. Compute size statistics with the computer program SIZDIST (Rukavina and Dolling, 1973.)

REFERENCES

Duncan, G.A. and N.A. Rukavina, 1972. The Sedigraph grain-size analyser - an alternative to pipette analysis. Abstracts, 15th Conf. Great Lakes res., p. 82.

Rukavina, N.A. and R.K. Dolling, 1973. SIZDIST: Statistical analysis for F.A.S.T. grain-size data. Proc. 16th Conf. Great Lakes Res., p. 1044-1045.

_____ and G.A. Duncan, 1970. F.A.S.T. - Fast analysis of sediment texture. Proc. 13th Conf. Great Lakes Res., p. 274-281.

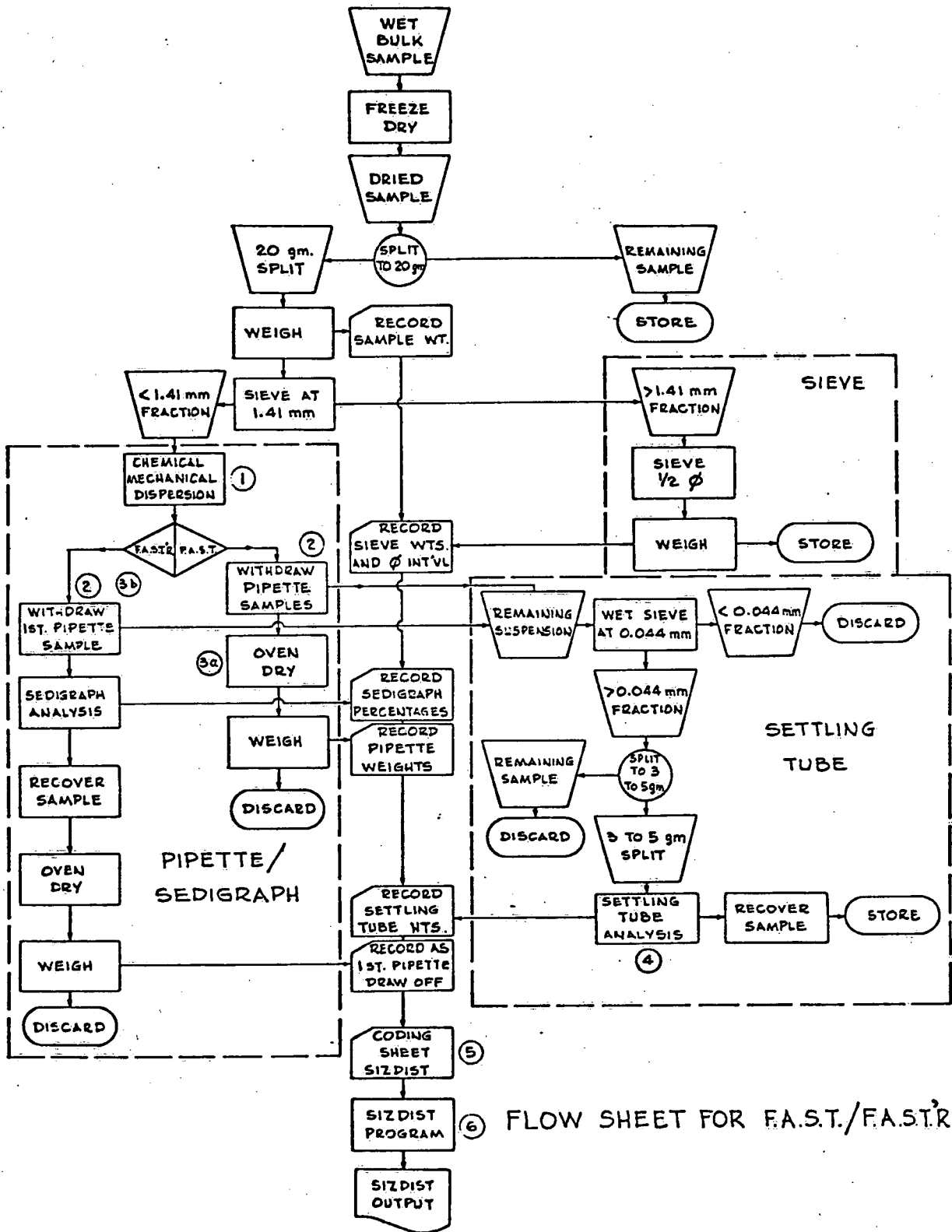


Figure 1

FLOW SHEET FOR F.A.S.T./F.A.S.T.R.